UNPUBLISHED
SURVEY & CONTROL
REPORTS

INTERMOUNTAIN STATION
Central Reference File
No. 3.4161

BUREAU OF
Entomology and Plant Quarantine
RECEIVED
JAN 19 1953
Coeur d'Alene, Ida.
Laboratory

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH ADMINISTRATION
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

Project | Date January 13, 1953 | Author Robert E. Stevens

SUBJECT—

TITLE

FOREST INSECT AERIAL SURVEY

CALIFORNIA REGION

FALL 1952

Forest Insect Laboratory
29 Forestry Bldg., U. C.
Berkeley 4, California

INDEX NO.—

U. S. GOVERNMENT PRINTING OFFICE 16—47272-1

FILE COPY
MISSOULA
FOREST INSECT
LABORATORY

FOREST INSECT AERIAL SURVEY

California Region
Fall 1952

INTRODUCTION

The annual aerial forest insect survey in California was carried out from September 29 through October 17, 1952. All eighteen national forests, three national parks, and commercial non-federal timberlands in the state were surveyed, with varying degrees of intensity. Limitations imposed by time and finances necessarily precluded a very intensive survey of areas of known low susceptibility; the greatest portion of the time was spent flying areas where infestations were known to exist or that history had shown to have high loss potentials. A total of approximately 74 hours of flying time was devoted to the project; 18:30 ferry time and 55:30 survey time.

Objectives

The 1952 aerial survey was undertaken with the following three purposes in mind:

1. Detection of previously unknown insect outbreaks
2. Reconnaissance of known outbreaks
3. Acquainting timber management personnel with insect problems existing on their lands by inviting their direct participation in survey flights over their respective holdings

Preparations

Prior to the flying phase of the survey, certain preparations were made in the Berkeley office. All forest supervisors, national park superintendents, deputy state foresters and interested representatives in industry were contacted by mail in mid-September relative to their participation in the survey.

A full set of 1/4" = 1 mile maps of California's national forests was obtained from the regional office of the Forest Service in San Francisco. Fire look-out towers and other prominent landmarks were circled in red pencil on these flight maps as an aid to navigation. (Nearly 100% coverage of California's commercial timberlands is afforded by these maps).

Colored pencils and aluminum sheets, measuring approximately 15" x 15" and used for backing the maps during the flights, and other necessary materials were assembled, and a tentative itinerary was prepared.

Equipment and personnel

A Cessna 170-B aircraft, attached to the Portland Forest Insect Laboratory, was used throughout the survey. This is a single-engined, four-place, high-winged, all metal airplane, powered with a 145 hp Continental engine.

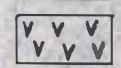
Bureau personnel participating included John F. Wear, Forester-pilot, Portland Laboratory, and Ralph C. Hall, Malcolm M. Furniss, George L. Downing and Robert E. Stevens of the Berkeley station. A total of 34 cooperators were flown; 12 Forest Service, 4 California State Division of Forestry, and 18 industrial foresters accompanied the aircrew on various flights.

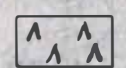
Survey Technique

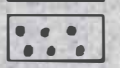
The basic crew consisted of Wear, pilot, and Stevens, observer. Routes were discussed on the ground immediately prior to take-off, but flight lines were not actually predetermined. Tracking was done in flight and the flight line sketched on the map as the flight progressed. Tracking and mapping were done by the observer, with the pilot assisting materially in the observation. The following color-symbol combinations were used in sketch-mapping infestations:

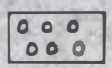
INSECT

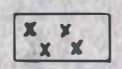
Defoliators


Western pine beetle, Jeffrey pine beetle


Pine engraver beetle


Mountain pine beetle


Fir engraver beetle


Douglas fir beetle

RELATIVE DEGREES OF INFESTATION

Light Moderate Heavy Very Heavy

Using this technique the affected areas were outlined and designated in the applicable color-symbol combination.

Operation

Having previously sent letters to cooperators and received letters of interest in reply, it remained to make specific arrangements where and when to meet each one. This was generally done by telephone from the three primary bases, two or three days in advance of the proposed date. In many instances, however, because of the very nature of such a survey, less time was involved, but cooperators proved to be very accommodating and sympathetic in respect to rapid changes of plans. The following table briefly summarizes the operational phases of the 1952 survey:

TABLE 1 - SURVEY OPERATIONS

Date	Bureau Personnel	Flew From	Cooperators	Picked Up At	Area Flown	Observations
9-29	Wear, Furniss Stevens	Redding	-	-	Parts of Shasta & Klamath NF	-
9-30-	"	"	R.H. Cron, Modoc NF	Alturas	Modoc NF	Modoc generally good. Approx. 3000 acres moderate to heavy D.b. loss noted in South Warner primitive area
10-1	"	"	K.E. Young & R. Ritchie, McCloud River Lbr. Co,& D. Prentice, Western Pine Assn.	McCloud	McCloud ownership & parts of Shasta NF	-
"	"	McCloud	-	-	Remainder of Shasta NF & parts of Lassen NF	Approx. 1000 acres moderate D.b. loss on east face of Miller Mtn., heavy windthrow in the vicinity of Eagle Rock & Garner Mtn., Heavy D.b & D.j. loss on Hat Creek rim
10-2	Wear, Stevens	Redding	H.Scherer, Klamath NF	Happy Camp	Part of Klamath NF	No pine loss. Some Scolytus work on higher elevations
10-2	"	Happy Camp	-	-	-	-
10-3	"	Redding	Wm. Beaty, Shasta Forest Co., T.H. Batchelor, U.S. Plywood Co.	Redding	Private lands east of Redding & parts of Lassen NF	Scattered light pine loss
"	"	"	P. Cox, Calif. Div. of Forestry L.Hastings, Walker Forest Co.	"	Latour State Forest & Walker Forest	Some Scolytus loss in Latour Forest, known Douglas-fir beetle activity in Walker Forest
10-4	"	"	R.C. Hall, BEFQ, L. Beltz, Plumas NF	Susanville	E.Plumas NF	Known infestation in the Thompson Peak area. Epidemic Jeffrey pine beetle loss
"	"	Susanville	R.C. Hall, BEFQ, G. Vance, Lassen NF	-	Lassen NF	Known infestations in the vicinity of Harvey Mtn., Hat Creek rim and Lost Creek, & an infestation west of Poison Lake, approx. 800 acres ponderosa pine
10-5	"	Redding	R. Bacon, Mendocino NF; Geo. Soares, Crane Mills, Inc.	Willows	Mendocino NF	No important loss areas observed
"	"	Willows	. -	-	Clear Lake - L. Pillsbury	No important loss observed Reported windthrow negligible
10-6	Wear, Furniss Stevens	Concord	D.Schlobohm, Calif. Div. of For., H. Wall Yosemite Mtn. Ranch Club	Fresno	Miami Creek area Sierra NF	Miami Creek infestation area, D.m. in pole size sugar pine
10-7	Wear, Stevens	Fresno	C.E. Risbrudt Sierra NF	"	Sierra NF	Heavy infestation in the vicinity of Beasore Creek, approx. 1500 acres of Jeffrey pine loss
"	"	Mt.Bullion	Risbrudt, Emil Ernst, Yosemite N.P.	"	Yosemite N.P.	Generally good pine beetle situation. Heavy lodgepole pine needleminer activity in roughly 40,000 acres in the Tenaya Lake Tuolumne Meadow area
10-8	"	Placerville	Wm. Kuphaldt, Blagen Lbr.Co. R. Meben, Winton Lbr. Co.	Jackson	Parts of Eldorado & Stanislaus NF	No infestation of note
"	"	Jackson	H.Dircksen & A. McCredie, Stanislaus NF	Columbia	Stanislaus NF	"
10-9	"	Placerville	T.Niehaus, Tahoe NF	Nevada City	Tahoe NF	"
"	"	Nevada City	D.Cosens, Soper-Wheeler Co. L.Beltz, Plumas NF	Brownsville Quincy	Western part of the Plumas NF	Widespread moderate Ips damage in the Sunset Hill - Brownsville general area
10-10	"	Placerville	A.W.Herbert, Stockton Box Co. M.D. Morris Eldorado NF	Placerville	Eldorado NF	Approximately 1500 acres heavy ponderosa pine loss east of Robbs peak
10-11	"	Reno	H.E. Norton, Tahoe Tbr. Co.	Reno	Parts of Tahoe NF & of private adj. lands	Crystal Bay infestation
"	"	"	B. Sweatt, Inyo NF	Convict Lake	Inyo NF	No important observations Red's Meadow fades not showing
"	"	Fresno	-	-	Sequoia NF Sequoia - Kings Canyon N.P	Scolytus damage fairly heavy in the true firs
10-13	Wear, Stevens	San Bernardino	P.Sischo, Calif. Div. of For., D. Bauer, San Bernardino NF	San Bernardino	San Bernardino NF	Arrowhead and Barton Flats infestation areas
"	Wear, Downing, Stevens	"	-	-	Angeles NF	Scattered known infestations in recreational areas
10-14	"	"	L. Britton, Cleveland NF	El Cajon	Cleveland NF	Known infestations at Mt. Laguna, Cuyamaca State Park, Corte Madera, Pine Valley and Palomar Mtn.
10-16	"	"	G.S. Roskie, Los Padres NF	Santa Barbara	Los Padres NF	Known infestations on Mt. Pinos and Figueroa Mtn.
10-17	Wear, Stevens	Santa Barbara	-	-	Monterey Division, Los Padres NF, Coastal Pine belt to San Francisco	No infestations noted

Costs

Survey costs were as follows:

Salaries	$ 702.50
Per diem and misc. expenses	379.48
Airplane operation and maintenance	232.76
Total	$1314.74
Approximate acreage surveyed	15,000,000
Total flying time	74 hours
Average total cost per hour	$17.77
Average cost per hour of aircraft operation	3.14
Approximate cost per 1000 acres	$ 0.09

The low over-all figure can generally be attributed to the use of an economical airplane, with no costs involved except operation and maintenance, and to a period of extremely favorable flying weather. Costs to the Berkeley Laboratory were reduced by the payment of Wear's salary by the Portland station.

Discussion and Recommendations

A few of the infestations noted from the air were not ground-checked before winter set in, and will have to be examined in the spring. In future years, it might be advisable to make more of an effort to do this immediately following aerial observation.

Cooperation received from all agencies, both public and private, was very gratifying to those connected with the aerial survey. The policy of renting or borrowing autos from the Forest Service for transportation to and from quarters, towns and airfields appears to be satisfactory, and eliminates the necessity of a Bureau man following the airplane from place to place with a car, or non-utilization of flight time due to the necessity for the observer to drive the auto. This works especially well when the crew can operate from a central location for 4 or 5 days at a time; some extra ferry time is added under this system, but is probably off-set by the convenience of not having to obtain a different place to stay every one or two nights.

A slight deficiency in the symbols used in sketch-mapping infestations was noted; mountain pine beetles in lodgepole pine and those in sugar pine could not be separated without adding a note to that effect alongside the mapped-in area, which resulted in a certain amount of confusion on the small-scale maps. This will be corrected for future surveys.

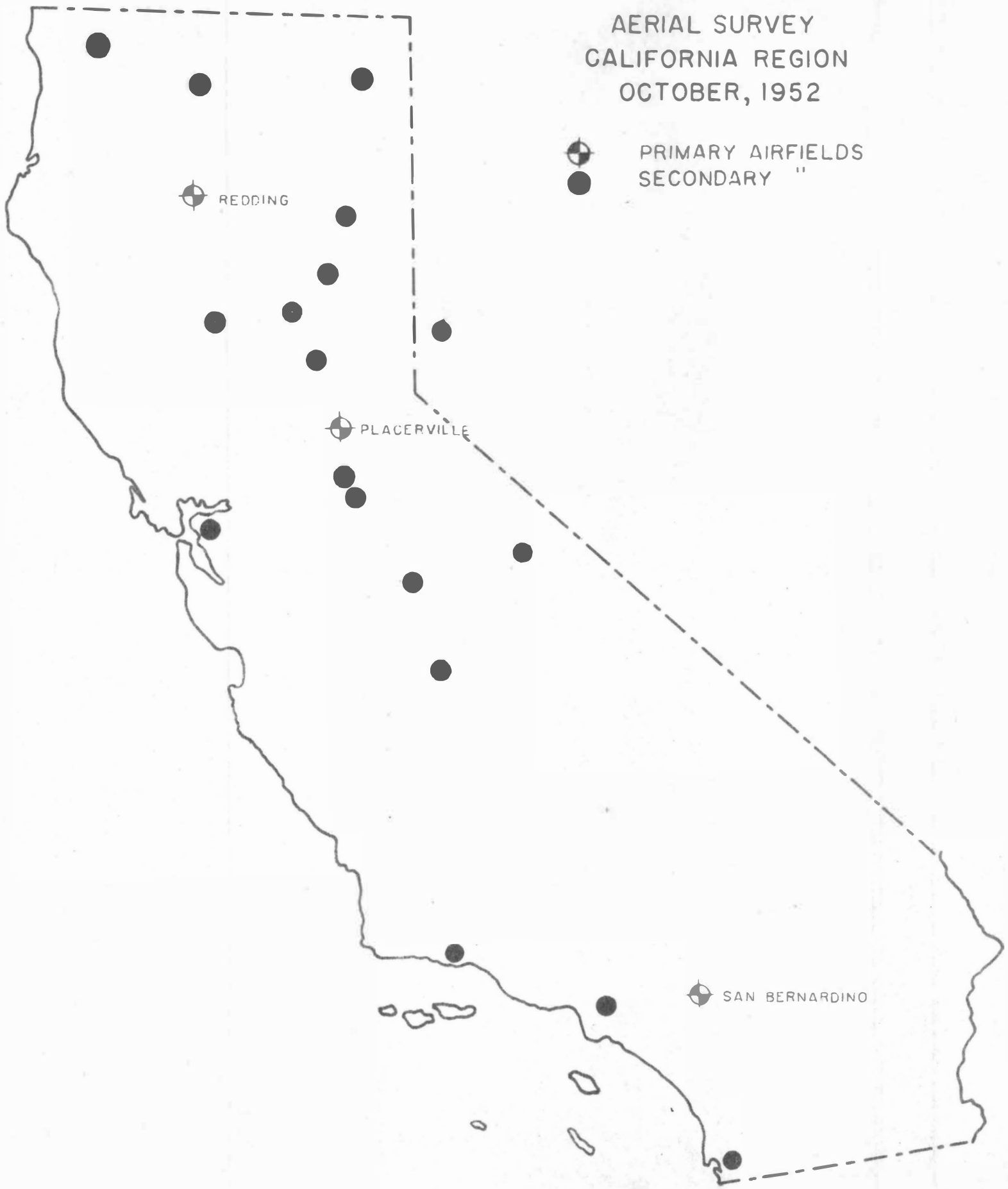
In the future it is doubtful that as much flying time for the money expended will be obtained as was this season. It is generally felt that a reasonably

comprehensive job was carried out this year, but certain areas might well have received additional attention, and a few more cooperators accommodated, had additional time been available. In view of this, it is proposed that the Berkeley station strive for a minimum of 100 hours of flying time for the state-wide survey.

Estimating a minimum of 4 hours flying per day, 25 flying days would be needed.

Approximate costs of a program on this basis are as follows:

Salaries -	Pilot	GS-9	25 days	$ 486.00
	Observer	GS-7	"	404.00
Per diem				400.00
Aircraft operation and maintenance				400.00
Misc. expenses				50.00
Total				$1740.00


AERIAL SURVEY
CALIFORNIA REGION
OCTOBER, 1952
PRIMARY AIRFIELDS
SECONDARY "
REDDING
PLACERVILLE
SAN BERNARDINO